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REPLY TO OFFICE ACTION

APPLICATION NUMBER 09/853,790

FILING DATE 05/11/2001

FIRST NAMED INVENTOR
Stanley H. Kremen

TITLE OF INVENTION
METHODS OF PREPARING HOLOGRAMS

ATTORNEY DOCKET NO. 102105-162-CIP1

EXAMINER:

Alessandro V. Amari

ART UNIT: 2872

DATE OF OFFICE ACTION:
Mailed 11/20/2002

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Twenty-four pages consisting of:

1. This cover sheet (1 page)

2. Transmittal Form PTO/SB/21 (1 page)

3. Fee Transmittal Form PTO/SB/17 (1 page)

4. Reply to first office action (8 page letter)

5. Attachment containing amendments to specification and claims (13 pages)

Also, check #1023 in the amount of \$203.00

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REGISTERED PATENT AGENT USPTO Registration No. 51,900 Customer Number: 34325

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission 18

Application Number	09/853,790	
Filing Date	n 05/11/2001	
First Named Inventor	Stanley H. Kremen	
Group Art Unit	2872	
Examiner Name	Alessandro V. Amari	
Attorney Docket Number	102105-162-CIP1	

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT							
Firm or Individual name Signature Date	Stanley H. Kre	emen	12/09/2002				
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Examiner Name	Alessandro V. Amari			
Group Art Unit	2872			
Attorney Docket No.	102105-162-CIP1			

METHOD OF PAYMENT	FEE CALCULATION (continued)					
1. The Commissioner is hereby authorized to charge	3. ADDITIONAL FEES					
indicated fees and credit any overpayments to:	Large Small					
Deposit Account	Entity Entity					
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Deposit Account Name	105 130 205 65 Surcharge - late filing fee or oath					
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Applicant claims small entity status.	139 130 139 130 Non-English specification					
See 37 CFR 1.27	147 2,520 147 2,520 For filing a request for ex parte reexamination					
2. Payment Enclosed:	112 920* 112 920* Requesting publication of SIR prior to					
Check Credit card Money Other Other	Examiner action					
FEE CALCULATION	113 1,840* 113 1,840* Requesting publication of SIR after Examiner action					
1. BASIC FILING FEE	115 110 215 55 Extension for reply within first month					
Large Entity Small Entity	116 400 216 200 Extension for reply within second month					
Fee Fee Fee Fee Description	117 920 217 460 Extension for reply within third month					
Code (\$) Code (\$) Fee Paid	118 1,440 218 720 Extension for reply within fourth month					
101 740 201 370 Utility filing fee 106 330 206 165 Design filing fee	128 1,960 228 980 Extension for reply within fifth month					
107 510 207 255 Plant filing fee	119 320 219 160 Notice of Appeal					
108 740 208 370 Reissue filing fee	120 320 220 160 Filing a brief in support of an appeal					
114 160 214 80 Provisional filing fee	121 280 221 140 Request for oral hearing					
	138 1,510 138 1,510 Petition to institute a public use proceeding					
SUBTOTAL (1) (\$) 0.00	140 110 240 55 Petition to revive - unavoidable					
2. EXTRA CLAIM FEES	141 1,280 241 640 Petition to revive - unintentional					
Fee from Ext <u>ra Claims below Fee Pald</u>	142 1,280 242 640 Utility issue fee (or reissue)					
Total Claims 42 -20** = 7 x 9.00 = 63.00	143 460 243 230 Design issue fee					
Independent 1 - 3** = 0 X 42.00 = 0.00	144 620 244 310 Plant issue fee					
Multiple Dependent 40.00 = 140.00	122 130 122 130 Petitions to the Commissioner					
	123 50 123 50 Processing fee under 37 CFR 1.17(q)					
Large Entity Small Entity	126 180 126 180 Submission of Information Disclosure Stmt					
Fee Fee Fee Fee Fee Description Code (\$) Code (\$) 103 18 203 9 Claims in excess of 20	581 40 581 40 Recording each patent assignment per property (times number of properties)					
102 84 202 42 Independent claims in excess of 3	146 740 246 370 Filing a submission after final rejection (37 CFR § 1.129(a))					
104 280 204 140 Multiple dependent claim, if not paid 109 84 209 42 ** Reissue independent claims over original patent	149 740 249 370 For each additional invention to be examined (37 CFR § 1.129(b))					
110 18 210 9 ** Reissue claims in excess of 20	179 740 279 370 Request for Continued Examination (RCE)					
and over original patent	169 900 169 900 Request for expedited examination of a design application					
SUBTOTAL (2) (\$) 203.00	Other fee (specify)					
**or number previously paid, if greater; For Reissues, see above	*Reduced by Basic Filing Fee Paid SUBTOTAL (3) (\$)	0.00				

Complete (if applicable) SUBMITTED BY Registration No. 51,900 (732)251-3623 Telephone Stanley H. Kremen Name (Print/Type) (Attorney/Agent) Signature 12/09/2002

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Six a

December 10, 2002

Commissioner for Patents Washington, DC 20231

In Re: Stanley H. Kremen (Inventor)

Non-Provisional Patent Application No. 09/853,790

Filed: May 11, 2001

Examiner:

Alessandro V. Amari

Group Art Unit:

2872

Express Mail Certificate No. EU 743197732 US

Date Mailed:

December 10, 2002

REPLY TO FIRST OFFICE ACTION

Gentlemen:

Receipt of your first office action dated November 20, 2002 is hereby acknowledged. In that office action, the Examiner issued a requirement for restriction 02/26/2003 AJOHNSOID 2000 1553350 U.S.C. § 121. In that action, the Examiner identified claims in the application which im his opinion belonged to six separate species (or embodiments) that are independent and patentably distinct. His requirement for restriction is based upon the opinion defining said six species. The Applicant respectfully disagrees with his opinion, traverses the Examiner's argument, and offers the following arguments to convince the Examiner.

The non-provisional application No. 09/853,790 (hereinafter the SUBJECT APPLICATION) is a continuation-in-part of non-provisional application No. 09/749,984 (still pending) filed on December 27, 2000, which in turn is a continuation of non-

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provisional application No. 09/111,990, filed on July 8 1998, now U.S. Patent No. 6,229,562 (hereinafter the '562 patent) granted May 8, 2001, which is non-provisional of provisional application No. 60/051,972 filed on July 8, 1997. The aforementioned applications and patent have been incorporated into the SUBJECT APPLICATION by reference in their entirety.

On May 11, 2001, the SUBJECT APPLICATION was filed in the U.S. Patent and Trademark Office (hereinafter USPTO) by registered patent attorneys of the firm of Goodwin, Procter & Hoar which at that time represented the Applicant. On September 9, 2002, the Applicant revoked all previous powers of attorney, and elected to continue prosecution of said application pro se. The Applicant is now a registered agent with the USPTO. Unfortunately, the Applicant does not have in his possession a copy of the original application with line numbers. Therefore, references to said application could cause confusion. However, said SUBJECT APPLICATION has been published as a pregrant publication No. 2001/0028485 A1. Said pre-grant publication refers to various paragraphs by number within brackets. So, to avoid confusion, all references herein will refer to the pre-grant publication which applicant accepts as being equivalent to the original SUBJECT APPLICATION except for possible minor typographical errors.

The Examiner identified the following designation of six species which the Applicant will use for identification purposes only. Furthermore, the claims to said species are patentable over each other. However, the Applicant asserts that many claims in the application are representative of alternate embodiments of the same invention.

- Species 1 Method of preparing a hologram by moveable apertures with focusing systems with F-numbers being equal claims 1-8
- Species 2 Method of preparing a hologram using holographic multiplexing optics claims 9-11
- Species 3 Method of preparing a hologram using Bragg angle holography claims 12-22
- Species 4 Method of preparing a hologram using an aberration and distortion-free optical system claims 23-29
- Species 5 Method of preparing a hologram wherein the 2-D image of an integral photograph is projected onto a diffuser plate claims 30-32
- Species 6 Method of preparing a hologram using image inversion from pseudoscopy to orthoscopy claims 33-35

Furthermore, the above distinctions (divisions into species) created by the Examiner are incorrect and not representative of the invention described in the SUBJECT APPLICATION.

Referring to Species 1, claim 1 is independent while claims 2-8 are dependent thereon. The Examiner states that the method claimed in the entire species is characterized by use of moveable apertures with focusing systems with F-numbers being equal. However, nowhere in claim 1 is there a mention of moveable apertures. In

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addition, diffuse coherent light is utilized in each of claims 1-8. While claims 2-8 are dependent upon claim 1, claim 1 was crafted by the Applicant to be a generic claim that encompasses the entire invention.

Referring to Species 2, claim 9 is independent while claims 10-11 are dependent thereon. Please note that the method of Species 2 also uses moveable apertures. Furthermore, it is not "a method of preparing a hologram using holographic multiplexing optics" as claimed by the Examiner. Instead, it represents "[a] method of preparing a hologram to be used for elemental image multiplexing ..." The hologram(s) referred to therein are components of the first active optical system of claim 1, and described in the specification of the SUBJECT APPLICATION as well as in the specifications and claims of the parent applications and the '562 patent. In addition, diffuse coherent light is utilized in each of claims 9-11.

Referring to Species 3, claim 12 is independent while claims 13-22 are dependent thereon. While the method of Species 3 does not use movable apertures, it functions by repositioning the photographic plate. Movement of the laser beam(s) relative to a photographic plate and movement of the photographic plate relative to the laser beam(s) should be considered to be an equivalent operation. However, examination of the description in the specification as well as examination of Figures 11(a) and 11(b) shows that fixed apertures are used. Furthermore, while the hologram created from the process of Species 3 is a Bragg angle hologram, it must be remembered that said hologram is a component of the second active optical system of claim 1, and described in the specification of the SUBJECT APPLICATION as well as in the specifications and claims of the parent applications and the '562 patent.

Referring to Species 4, claim 23 is independent while claims 24-29 are dependent thereon. The method described therein is not "a method of preparing a hologram using an aberration and distortion free optical system" as claimed by the Examiner. Instead it represents "[a] method of preparing a hologram to be used ... as a high quality holographic imaging system to transfer low abberation and low distortion images ..." It must be remembered that said hologram is a component of the first active optical system of claim 1, and described in the specification of the SUBJECT APPLICATION as well as in the specifications and claims of the parent applications and the '562 patent.

Referring to Species 5, claim 30 is independent while claims 31-32 are dependent thereon. It is true that the method claimed therein uses a diffuser plate, but it must also be remembered that the most practical embodiment of the invention of the parent applications and the '562 patent requires that a 2-dimensional representation of the initial 3-dimensional scene be recorded permanently as an integral photograph. This recording is shown in Figure 1 by numeral 3. A magnified 2-dimensional image of that permanent recording is shown in Figure 1 by numeral 4. This magnified image can also be a permanent recording. In Figure 1, both recordings 3 and 4 are components of the first active optical system of claim 1, and described in the specification of the SUBJECT APPLICATION as well as in the specifications and claims of the parent applications and

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the '562 patent. The inclusion of these recordings as components of the integrated optical system of the referenced invention is key to the utility of some of its embodiments. As described in the parent applications and the '562 patent, said recordings may be prepared as ordinary photographs or they may be prepared as holograms. The parent applications and the '562 patent describes several advantages of using holograms instead of ordinary photographs such as permitting movement of the film at constant velocity. The method described in **Species 5** refers to preparation of said components of said first active optical system.

Finally, referring to **Species 6**, claims 33-35 are each independent. However, it must be remembered that conversion from pseudoscopy to orthoscopy is a necessary function of the integrated optical system of claim 1. In fact it is a part of the preferred embodiment of the invention of the parent applications and the '562 patent, and represents a necessary requirement therein.

It should be obvious, therefore, that claim 1 is a generic claim that encompasses the entire invention. Just as a conventional optical system designed to produce a desired imaging result can be produced as a single optical element or, alternatively, as a complex optical system comprised of a plurality of optical elements, so also can a holographic optical system be produced as a single hologram or as a complex optical system comprised of a plurality of coordinated and complementary holograms. Furthermore, said complex holographic optical system may also contain some non-holographic optical elements. The SUBJECT APPLICATION claims a method wherein either the entire optical system may be created as a whole or as individual elements. The use of movable apertures, movable photographic plates, and/or diffuser plates merely represent alternative embodiments of a method of preparing said optical system. The '562 patent defines a single invention comprised of a system that produces 3-dimensional images even though it describes preferred and alternate embodiments. Likewise, the SUBJECT APPLICATION also represents a single invention of a method of preparing the optical system for said '562 patent where holographic optical elements are used even though it also describes preferred and alternate embodiments. 35 U.S.C. § 112 first paragraph states:

35 U.S.C. § 112 Specification.

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

If the SUBJECT APPLICATION indeed defines a single invention containing a preferred and several alternate embodiments, then a restriction requirement for election of one such embodiment would necessitate the Applicant filing divisional applications for the non-elected embodiments. Consequently, said divisional applications might not be able to claim "the best mode contemplated by the inventor of carrying out his invention." While

the specification may still describe said best mode, the absence of the preferred embodiment would tend to make portions of the specification extraneous.

37 CFR § 1.141(a) states:

37 CFR § 1.141 Different inventions in one national application.

(a) Two or more independent and distinct inventions may not be claimed in one national application, except that more than one species of an invention, not to exceed a reasonable number, may be specifically claimed in different claims in one national application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to species in excess of one are written in dependent form (§ 1.75) or otherwise include all the limitations of the generic claim.

In the SUBJECT APPLICATION, it was always intended by the Applicant that claim 1 be the generic claim to all the claimed species. Although claims 9, 12, 23, 30, 33, 34 and 35 are independent, they are meant to describe a single invention, just as independent claims in the '562 patent describe a single invention. However, the Applicant recognizes that if the Examiner is confused by the appearance of several independent claims, the public might also be confused.

Therefore, attached to this reply are amendments to the specification and claims of the SUBJECT APPLICATION. The Applicant asserts that by so amending, no new matter is introduced into the SUBJECT APPLICATION. Everything contained in the amendments is present either in the SUBJECT APPLICATION, the parent applications, or the '562 patent.

The first amendment is to the title of the invention. The Applicant desires this change for clarification purposes so that the subject matter of the invention described and claimed in the SUBJECT APPLICATION should be more understandable. Next, several amendments are made to the specification. These amendments are consistent with the change in title, and serve to better describe the preferred and alternate embodiments of the invention. Finally, amendments are made to the claims. The resultant application now only has one independent claim, *i.e.*, claim 1. The amendment to claim 1 is in the preamble, and it is consistent with the change in title. Dependent claims 36-40 have been added with claim 39 being in multiple dependent form dependent in the alternate upon claims 36, 37, or 38.

- Claim 36 is consistent with and dependent upon amended claim 1, and claims the method for making a coordinated and complementary set of holograms for the recording and projection of images in substantially 3-dimensional format.
- Claim 37 is consistent with and dependent upon amended claim 1, and it claims the special case wherein the coordinated and complementary set of holograms is actually a single hologram.

- Claim 38 is consistent with and dependent upon amended claim 1, and it claims the special case wherein the coordinated and complementary set of holograms is part of an integrated optical system comprising some non-holographic optical elements.
- Claim 39 is a multiple dependent claim dependent in the alternate upon claims 36, 37, or 38, and it claims the preparation of a hologram by exposing portions of a photographic plate incrementally until the entire hologram is produced.
- Claim 40 is dependent upon claim 39, and it claims the use of movable apertures in accomplishing said incremental exposure.

Next, amendments are made to existing claims 2, 9, 12, 23, 30, 33, 34, and 35:

- Claim 2 is made dependent upon claim 40.
- Claim 9 is made dependent upon claim 2.
- Claim 12-is-made-dependent upon-claim 39.
- Claim 23 is made dependent upon claim 38.
- Claim 30 is made dependent upon claim 38.
- Claim 33 is made dependent upon claim 38.
- Claim 34 is made dependent upon claim 38.
- Claim 35 is made dependent upon claim 38.

I trust that the arguments presented by the Applicant along with the following amendments to the title, specifications, and claims will convince the Examiner to remove the restriction requirement. However, should said arguments and amendments not be convincing in and of themselves, the Applicant offers the following additional argument.

In the Manual of Patent Examining Procedure, Original Eighth Edition, August 2001, Section MPEP §808.02 states:

808.02 Related Inventions

Where, as disclosed in the application, the several inventions claimed are related, and such related inventions are not patentably distinct as claimed, restriction under 35 U.S.C. 121 is never proper (MPEP § 806.05). If applicant optionally restricts, double patenting may be held. Where the related inventions as claimed are shown to be distinct under the criteria of MPEP § 806.05(c)-§ 806.05(i), the examiner, in order to establish reasons for insisting upon restriction, must show by appropriate explanation one of the following:

- (A) Separate classification thereof: This shows that each distinct subject has attained recognition in the art as a separate subject for inventive effort, and also a separate field of search. Patents need not be cited to show separate classification.
- (B) A separate status in the art when they are classifiable together: Even though they are classified together, each subject can be shown to have formed a separate subject for inventive effort when an explanation indicates a recognition of separate inventive effort by inventors. Separate

status in the art may be shown by citing patents which are evidence of such separate status, and also of a separate field of search.

(C) A different field of search: Where it is necessary to search for one of the distinct subjects in places where no pertinent art to the other subject exists, a different field of search is shown, even though the two are classified together. The indicated different field of search must in fact be pertinent to the type of subject matter covered by the claims. Patents need not be cited to show different fields of search. Where, however, the classification is the same and the field of search is the same and there is no clear indication of separate future classification and field of search, no reasons exist for dividing among related inventions.

Even if the Examiner still believes that his six proposed species represent separate independent inventions and not alternate embodiments, he should-be able to see that the species are related, that they do not possess a separate classification, that they do not represent a separate status in the art, and that they do not require a different field of search. In fact, the pre-grant publication indicates a U.S. classification of 359/31 (with an auxiliary classification of 359/32) and an international classification of G03H 1/00 (with an auxiliary classification of G03H 1/22).

The Applicant does <u>not</u> admit that all claims in the SUBJECT APPLICATION stand or fall together.

The Applicant hereby respectfully submits to the Examiner the foregoing arguments along with the attached amendments, and requests that the restriction requirement be removed. The Applicant also believes that, should the Examiner accept the claim amendments, the restriction requirement would become moot. However, the Applicant is also aware of the requirement under 35 U.S.C. §121 and 37 CFR §1.143 that he provisionally elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. To comply with this requirement, the Applicant provisionally elects the Examiner's designated **Species 3** for further prosecution. However, by doing so, the Applicant does not waive his right of appeal or petition regarding any adverse decision on this matter.

The Applicant trusts that the information provided herein will prove sufficient as a reply to the Examiner's first office action. The Applicant asserts that he has made a good faith effort to provide a complete reply to the action. However, in spite of his effort, should the reply be deficient in any way, since time still remains for replying to this action, the Applicant requests that the Examiner respond with an advisory action indicating what must still be done by the Applicant to complete the reply.

After the Examiner has had the opportunity to review the Applicant's arguments and the attached amendments, should the Examiner believe that all claims in the SUBJECT APPLICATION are not in condition for allowance, the Applicant respectfully requests the opportunity of an interview with the Examiner. If the remaining objections

and/or rejections are simple, perhaps a telephone interview will suffice. However, the Applicant would have no problems traveling to Virginia to meet with the Examiner. The purpose of said interview would be to discuss the claims in an effort to work with the Examiner to put the entire SUBJECT APPLICATION into a condition for allowance as soon as possible.

The Applicant wishes to make a final request. When the SUBJECT APPLICATION was submitted to the USPTO on May 11, 2001, it was correctly submitted with the correct inventorship, *i.e.*, in the name of the sole inventor, **Stanley H. Kremen**. However, the pre-grant publication indicates the Applicant's name as **Stanley Kremen**, *i.e.*, without the middle initial "H." Omission of the middle initial is clearly an error of the USPTO since the filing receipt (as well as the cover sheet of the original application) contain the middle initial. The Applicant respectfully requests that his entire name with the middle initial included, *viz.*, **Stanley H. Kremen**, appear on any patent that issues from the SUBJECT APPLICATION.

Thank you for your kind attention.

Respectfully submitted,

Stanley H. Kremen,

Applicant

Registration No. 51,900